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YOUNG & THOMPSON
745 SOUTH 23RD STREET
2ND FLOOR
ARLINGTON, VA 22202

EXAMINER	
YODER III, CHRISS S	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/576,266	HELLSTRAND, MAGNUS	
	Examiner	Art Unit	
	Chriss S. Yoder, III	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-9, 14-26, and 30-36* is/are rejected.

7)☐ Claim(s) *10-13 and 27-29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 June 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1, 5, and 24 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 3, 24, 26, and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suda et al. (US Patent # 6,088,060) in view of Olsen et al. (US Patent # 3,932,733) and further in view of Xie et al. (US Patent # 5,874,994).

2. In regard to claim 1, note Suda discloses the use of an optical apparatus (column 1, lines 40-42; and figure 1: 1), a controllable optical convergence element (column 1, lines 63-65; and figure 1: 8), an image detector arranged so as to receive an image of an object projected by the optical convergence element (column 1, lines 40-43; and figure 1: 2), a processor arranged so as to receive signals from the image detector and to generate control signals to control the optical convergence element to focus the image of the object onto the image detector (column 1, lines 63-67; and figure 1: 5, 10, and 7), wherein the processor comprises a search element constructed and arranged

so as to analyze the image on the image detector to select at least one window in the image in connection with which a focusing operation is to be performed in accordance with predetermined conditions (column 7, lines 32-35; and figure 4), and wherein the processor further comprises a focusing element in the processing means constructed and arranged so as to control the optical convergence element so as to focus a portion of the image within the at least one image using an iterative process (column 3, lines 57-65; the automatic focusing means uses the calculating means to determine the difference information; and figure 9a shows the iterative process of detecting a focusing window).

Therefore, it can be seen that the Suda device fails to operate in the infrared range and that the iterative process comprises the steps of performing a coarse focusing using only a first range of spatial frequency components of the image, and after the coarse focusing step, performing a fine focusing using only a second range of spatial frequency components of the image, the second range being higher than the first range.

Olsen discloses the use of a camera that operates to focus an image in the infrared using infrared light (column 2, lines 34-39). It is well known that the use of an image sensor that is operable in the infrared range is preferred in order to allow for more versatility and to work the range of light not visible to the eye. Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include the operation of the device in the infrared range so as to pickup light that is not visible to the eye, such as thermal images.

Xie discloses the use of an image focusing apparatus that uses an iterative process that comprises the steps of performing a coarse focusing using only a first range of spatial frequency components of the image (column 2, lines 8-12), and after the coarse focusing step, performing a fine focusing using only a second range of spatial frequency components of the image, the second range being higher than the first range (column 2, lines 17-22). Xie teaches that the use of coarse and fine focusing functions that are based on low frequency and high frequency ranges is preferred in order to increase focusing response time without sacrificing precision (column 1, lines 23-25). Therefore, it would have been obvious to one of ordinary skill in the art to modify the Suda device to include the use of an iterative process that comprises the steps of performing a coarse focusing using only a first range of spatial frequency components of the image, and after the coarse focusing step, performing a fine focusing using only a second range of spatial frequency components of the image, the second range being higher than the first range as suggested by Xie.

3. In regard to claim 3, note Xie discloses that the coarse focusing step comprises a "hill-climbing" technique and the fine focusing step comprises a "curve-fitting" technique (column 2, lines 5-21; and figure 5; A is considered the "curve-fitting" and B is considered the "hill-climbing").

4. In regard to claim 24, this is a method claim, corresponding to the apparatus of claim 1. Therefore, claim 24 has been analyzed and rejected as previously discussed with respect claim 1.

5. In regard to claim 26, this is a method claim, corresponding to the apparatus of claim 3. Therefore, claim 26 has been analyzed and rejected as previously discussed with respect claims 3.

6. In regard to claim 31, note Suda discloses that the iterative process is a variable iterative process (figure 9a shows the iterative process of detecting a focusing window).

7. In regard to claim 32, note Xie discloses the use of the variable iterative process is selected based on frequencies of the image (column 2, lines 5-21).

8. In regard to claims 33-34, these are method claims, corresponding to the apparatus of claims 31-32, respectively. Therefore, claims 33-34 has been analyzed and rejected as previously discussed with respect claims 31-32.

9. Claims 4, 17, 19-21, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suda et al. (US Patent # 6,088,060) in view of Olsen et al. (US Patent # 3,932,733), further in view of Xie et al. (US Patent # 5,874,994), and in further view of Williams et al. (US Patent #6,281,970).

10. In regard to claim 4, note the primary reference of Suda in view of Olsen and Xie discloses the selection of a focus window area other than the most centrally situated area (Suda: column 7, lines 30-35; and figure 4). Therefore, it can be seen that the primary device lacks the combination of the focusing device with supporting decision-making systems and the storage of digital images in memory. Williams discloses the combination of the focusing device with supporting decision-making systems (column 7, lines 8-25; and figure 8: the computer and the pan/tilt devices). It is well know in the art to use a supporting decision making system such as a pan/tilt device in order to track an

object in an image. Official notice is taken that the concepts and advantages of the storage of digital images is notoriously well known and expected in the art. Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include the use of a combination of the focusing device with supporting decision making systems and the storage of digital images in order to track an object and to store an accurate image that can be recalled at a later time.

11. In regard to claim 17, note the primary reference of Suda in view of Olsen and Xie discloses the selection of focusing areas (Suda: column 7, lines 32-35). Therefore, it can be seen that the primary device fails to calculate possible ranges for focus at a certain temperature. Williams discloses that the selection of areas is based on temperatures (column 3, lines 55-59), while leaving out the areas where processing is not needed in order to reduce the processing required (column 3, lines 55-59; the device only selects the hotspots which implies that the areas which are not desired are not used). Williams teaches that the selection of areas is based on temperatures is preferred in order select focus areas only based on specific temperatures such as forest fires, which prevents the selection of areas of incorrect temperatures (column 2, lines 36-47). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include the selection of areas of focus based on specific temperatures as suggested by Williams.

12. In regard to claim 19, note the primary reference of Suda in view of Olsen and Xie discloses the use of an image analyzing focusing device as claimed in claim 1. Therefore, it can be seen that the primary reference fails to disclose the use of pan-tilt

type equipment that controls a repeated sequence of movements between objects or focus windows within the viewed image and may send notification in response to trigger conditions. Williams discloses the use of a pan-tilt device that controls a repeated sequence (figure 1a: the nutation and direction of scan show a repeated sequence of movements) within the viewed area, and sends notification messages in response to predetermined trigger conditions (column 3, lines 54-60; and column 15, lines 1-4; the hotspots are the trigger condition). Williams teaches that the use of pan-tilt type equipment that controls a repeated sequence of movements between objects or focus windows within the viewed image and that may send notification in response to trigger conditions is preferred in order to detect when hotspots have been located and to notify the user (column 4, lines 1-14). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include use of pan-tilt type equipment that controls a repeated sequence of movements between objects or focus windows within the viewed image and sending notification in response to trigger conditions is preferred as suggested by Williams.

13. In regard to claim 20, note Williams discloses that the computer stores the topographic map of the viewed area (column 6, lines 62-66; and figure 8: the computer stores the terrain map), and using this map to focus on specific areas of the viewed area (although it does not explicitly state that this is focus data, it is implied that since this map contains distance information that it is used for focusing).

14. In regard to claim 21, note Williams discloses that the trigger conditions comprise the thermal conditions within the area (column 3, lines 54-60;and column 15, lines 1-4; the hotspots are the trigger condition).

15. In regard to claim 30, note the primary reference of Suda in view of Olsen discloses the use of a image analyzing focusing device as claimed in claim 24. Williams discloses using the device for the inspection, monitoring, and surveillance of the forest fires (column 1, lines 26-28). Williams teaches that the use of this device is preferred to be used for research, observation, and measurement because the thermal capabilities can distinguish forest fires from the rest of the image (column 1, lines 15-30). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to be used for surveillance as suggested by Williams.

16. Claims 5-8 and 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suda et al. (US Patent # 6,088,060) in view of Williams et al. (US Patent # 6,281,970).

17. In regard to claim 5, note Suda discloses an image analyzing focusing device for an infrared optical apparatus (column 1, lines 40-42; and figure 1: 1) comprising a controllable optical convergence element (column 1, lines 63-65; and figure 1:8), an image detector arranged so as to receive an image of an object projected by the optical convergence element (column 1, lines 40-43; and figure 1: 2), and a processor arranged so as to receive signals from the image detector and to generate control signals to control the optical convergence element to focus the image of the object onto the image detector (column 1: lines 63-67; and figure 1: 5, 10, and 7), wherein the processor

comprises a search element constructed and arranged so as to analyze the image on the image detector to select at least one image window in the image in connection with which a focusing operation is to be performed in accordance with predetermined conditions (column 7, lines 32-35; and figure 4; the image window is selected), and wherein the processor further comprises a focusing element in the processing means constructed and arranged so as to control the optical convergence element so as to focus the image on the at least one image window using an iterative process (column 3, lines 57-65; ; the automatic focusing means uses the calculating means to determine the difference information; and figure 9a shows the iterative process of detecting a focusing window).

Therefore, it can be seen that the Suda fails to disclose that the device operates in the infrared range and that the predetermined conditions for selecting the image window comprise thermal properties of objects represented within the image.

Williams discloses the use of an infrared sensor to capture the images (column 2, lines 35-40) and detecting the differences in thermal properties to determine locations within an image (column 2, lines 35-40). Williams teaches that the use of an infrared sensor to detect differences in thermal properties is preferred in order to detect heat such as forest fires in order to observe and research the specific hotspot (column 2, lines 36-47). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include the use of an infrared sensor and sensor instrumentation as suggested by Williams.

18. In regard to claim 6, note Williams discloses that the sensor instrumentation monitors predetermined temperature differences or changes (column 15, lines 1-4; while scanning the image, it is monitoring for predetermined levels).

19. In regard to claim 7, note Williams discloses a computer connected to the radiometer (figure 8: 184 and 200; this is considered to be the equivalent to a radiometric calibration device, which sets the temperature levels to scan for).

20. In regard to claim 8, note Williams discloses sensor instrumentation and a calibration device, which are used to monitor predetermined temperatures or temperature intervals in the image (column 7, lines 32-38; and column 15, lines 1-4).

21. In regard to claim 35, note Williams discloses the detection of an area of the image that is based on the identification of a portion of the image representing a highest temperature (column 3, lines 55-56; the hotspot is considered to be the highest temperature).

22. In regard to claim 36, note Williams discloses the detection of an area of the image that is based on the identification of a portion of the image with respect to the temperature (column 3, lines 55-56; the hotspot is considered to be the highest temperature), although Williams does not explicitly disclose that the portion of the image is selected based on the lowest temperature, it is merely a matter of design choice (for instance, in the Williams reference, the device is searching for a fire, so based on design choice, if the user wanted to search for an iceberg, it would be an obvious modification to change the temperature range based on the preference of the user in order to select the lowest temperature region). Therefore, it would have been obvious

to one of ordinary skill in the art to modify the Williams device to search for the lowest temperature based on design choice.

23. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suda et al. (US Patent # 6,088,060) in view of Olsen et al. (US Patent # 3,932,733), further in view of Xie et al. (US Patent # 5,874,994), and in further view of Sato et al. (US Patent # 5,861,915).

24. In regard to claim 9, note the primary reference of Suda in view of Olsen and Xie discloses the use of an image analyzing focusing device as claimed in claim 1. Therefore, it can be seen that the primary reference fails to disclose the automatic calibration of the relation between temperature of the optics and the focus position of the optics. Sato discloses the automatic calibration of the relation between temperature of the optics and the focus position of the optics (column 5, lines 49-52; and figure 1: 5, 13, and 41). Sato teaches that the automatic calibration of the relation between temperature of the optics and the focus position of the optics is preferred in order to compensate for defects caused by differences in temperature (column 4, lines 30-36). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include the automatic calibration of the relation between temperature of the optics and the focus position of the optics as suggested by Sato.

25. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suda et al. (US Patent # 6,088,060) in view of Olsen et al. (US Patent # 3,932,733), further in view of Xie et al. (US Patent # 5,874,994), and in further view of Suda (US Patent # 6,556,246).

26. In regard to claim 14, note the primary reference of Suda in view of Olsen and Xie discloses the use of an image analyzing focusing device as claimed in claim 1. Therefore, it can be seen that the primary reference fails to disclose the coupling of a device to enable focusing on moving objects where the focus window is movable across the image and follows the moving object in the window. Suda discloses focusing on moving objects where the focus window is movable across the image and follows the moving object in the window (column 3, lines 41-45; and column 6, lines 5-10; and figure 4; the image focusing device detects movement, which may include image-shake, and follows the movement in the image plane). Suda teaches that focusing on moving objects where the focus window is movable across the image and follows the moving object in the window is preferred in order to correct for image shake (column 5, lines 25-35). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include focusing on moving objects where the focus window is movable across the image and follow the moving object in the window as suggested by Suda.

27. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suda et al. (US Patent # 6,088,060) in view of Olsen et al. (US Patent # 3,932,733), further in view of Xie et al. (US Patent # 5,874,994), and in further view of Kaneda (US Patent # 6,246,437).

28. In regard to claim 15, note the primary reference of Suda in view of Olsen and Xie discloses the use of an image analyzing focusing device as claimed in claim 1. Therefore, it can be seen that the primary reference fails to disclose the use of

geometric shapes to find the image window to focus. Kaneda discloses the recognition of geometric shapes to find the image window to focus (column 8, lines 20-23). Kaneda teaches that the use of geometric shapes to determine the focus area is preferred in order to compensate for vibrations (column 8, lines 52-55). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include the use of geometric shapes to determine the focus area as suggested by Kaneda.

29. In regard to claim 16, note Kaneda discloses the recognition of geometric shapes to find the image window to focus the storage of the geometric shapes (column 8, lines 20-23). Although Kaneda does not explicitly disclose the transmitting means for the geometric shapes, the transmission of the geometric shapes is necessary in order for comparison and tracking of the shape.

30. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suda et al. (US Patent # 6,088,060) in view of Olsen et al. (US Patent # 3,932,733), further in view of Xie et al. (US Patent # 5,874,994), and in further view of McIntyre et al. (US Patent # 5,752,115).

31. In regard to claim 18, note the primary reference of Suda in view of Olsen and Xie discloses the use of an image analyzing focusing device as claimed in claim 1. Therefore, it can be seen that the primary reference fails to disclose that it sets the focus position to infinity when no object is found in the image. McIntyre discloses that the focus position is set to infinity when no object is found in the image (column 7, lines 1-25). McIntyre teaches that setting the focus position to infinity when no object is found in the image is preferred in order to establish proper focus and capture a clear

image (column 7, lines 1-25). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to set the focus position to infinity when no object is found in the image as suggested by McIntyre.

32. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suda et al. (US Patent # 6,088,060) in view of Olsen et al. (US Patent # 3,932,733), further in view of Xie et al. (US Patent # 5,874,994), and in further view of Lee (US Patent # 6,507,366).

33. In regard to claim 22, note the primary reference of Suda in view of Olsen and Xie discloses the use of an image analyzing focusing device as claimed in claim 1. Therefore, it can be seen that the primary reference fails to disclose the use of an automatic zooming device. Lee discloses the use of an automatic zooming device (column 3, lines 28-31; and figure 1: 6). Lee teaches that the use of an automatic zooming device is preferred in order to track an object that moves away from the imaging device (column 2, lines 16-36). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include an automatic zooming device as suggested by Lee.

34. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suda et al. (US Patent # 6,088,060) in view of Olsen et al. (US Patent # 3,932,733), further in view of Xie et al. (US Patent # 5,874,994), in further view of Lee (US Patent # 6,507,366), and in further view of Williams et al. (US Patent #6,281,970).

35. In regard to claim 23, note the primary reference of Suda in view of Olsen, Xie, and Lee discloses the use of an image analyzing focusing device as claimed in claim

22. Therefore, it can be seen that the primary reference fails to disclose the use of GPS to calculate the position of the viewed objects. Williams discloses the use of GPS to calculate the position of the viewed objects (column 1, lines 15-17; column 4, lines 1-14; and figure 11: 37 and 252). Williams teaches that the use of GPS to calculate the position of the viewed objects is preferred in order to properly research, observe, and measure the characteristics of forest fires (column 1, lines 15-30). Therefore, it would have been obvious to one of ordinary skill in the art to modify the primary device to include the use of GPS to calculate the position of the viewed objects as suggested by Williams.

36. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suda et al. (US Patent # 6,088,060) in view of Olsen et al. (US Patent # 3,932,733), further in view of Xie et al. (US Patent # 5,874,994), and in further view of Suda (US Patent # 5,739,858).

37. In regard to claim 25, note the primary reference of Suda in view of Olsen and Xie discloses the use of an image analyzing focusing device as claimed in claim 1. Therefore, it can be seen that the primary reference fails to disclose that the coarse and fine focusing steps are combined. Suda (US Patent # 5,739,858) discloses that the coarse and fine focusing steps are combined (column 3, line 60 – column 4, line 13). Suda (US Patent # 5,739,858) teaches that the combination of coarse and fine focusing is preferred in order to provide quick and accurate focusing without hunting (column 2, lines 20-23). Therefore, it would have been obvious to one of ordinary skill in the art to

modify the primary device to include the combination of coarse and fine focusing as suggested by Suda (US Patent # 5,739,858).

Allowable Subject Matter

Claims 10-13 and 27-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

38. As for claims 10, the prior art does not teach or fairly suggest an image focusing device that processes an image to find at least one window to which focusing is to be done dependent upon characteristics within the window, as well as estimating the distance from the device to an object using the temperature and/or position of the optics.

39. As for claims 27, the prior art does not teach or fairly suggest an image focusing method that processes an image to find at least one window to which focusing is to be done dependent upon characteristics within the window using the function:

$$FMF(z) = \frac{1}{N}\sum (K \otimes I_z - m)^2$$

where K is an operator, N is a factor of normalization, and m is a variable.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chriss S. Yoder, III whose telephone number is (571) 272-7323. The examiner can normally be reached on M-F: 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CSY
May 26, 2005

WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600